DOCUMENT RESUME

ED 091 815 EA 006 162

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TITLE Constructs for Studying Change Processes.
PUB DATE Apr 74
NOTE 13p.; Paper presented at the Annual Meeting of the American Educational Research Association (59th, Chicago, Illinois, April 1974)
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EDRS PRICE MF-$0.75 HC Not Available from EDRS. PLUS POSTAGE
DESCRIPTORS Change Agents; Change Strategies; *Educational Anthropology; *Educational Change; *Educational Innovation; *Educational Research; Factor Analysis; Research Methodology

ABSTRACT

On the basis of an anthropological descriptive study of 16 schools and a study of the high innovative schools compared with low innovative schools, an interaction hypothesis was formulated. The hypothesis included theoretical constructs of system innovative thrust, personnel innovative thrust, and selected educational change. In this paper, these constructs are defined in terms of variables, and a factor-analytic approach to measuring these constructs is proposed. The significance of the hypothesis is discussed in terms of extending existing knowledge regarding change processes and as a potential diagnostic tool for use with schools seeking to implement specific changes. (Author)

CONSTRUCTS FOR STUDYING CHANGE PROCESSES*

Introduction

Educators are generally agreed that there is need for changes in most school systems and that there is currently no adequate knowledge base regarding the means for effectively implementing these changes. Federal and state funds have encouraged innovative and exemplary programs through a variety of programs over the past ten years. Frequently, however, a "successful" innovation either dies when special support is withdrawn or the impact of the program is limited to the immediate district served by the project.

The critical need toward which this study was directed is to identify factors and strategies that seem to cause educational innovations to be adopted or adapted in schools and school districts. The research literature is replete with other research studies addressed to the same need. However, this study differs from most other studies in two respects. First, the study was not an attempt to gather quantitive data to determine isolated variables associated with the diffusion and persistence of educational innovations. Rather, the study attempted to identify interrelated and

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*Paper presented to the 1974 AERA Meeting, Chicago, Illinois, April, 1974.

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Paper based on results of Florida State Department Contract Number 730-076, "The Dissemination/Diffusion Process in Selected Florida Schools" Final Report, October 1, 1973.

interacting institutional arrangements or conditions which affect the communication and adoption of new curricular or instructional practices in education.[1] It was hoped that through this study it would be possible to generate hypotheses which could then be tested through the collection of quantitive data.

A second manner in which the study differed from most other studies was in the methodology used. Data were collected regarding the natural history of innovations utilizing anthropological research methods of inquiry as described in the next section. Eight advanced degree students in anthropology conducted field studies in sixteen schools under the direction of Dr. Elizabeth Eddy, Professor of Anthropology at the University of Florida and currently President of the Council on Anthropology in Education. The study was financed through a grant from the Florida State Department of Education.

Methodology

Research studies on change have generally started with one or more hypotheses to be tested. These hypotheses have, in turn, been generated from some theoretical constructs deduced logically from *a priori* assumptions. This research study employed an inductive rather than a deductive approach. A description was made of the natural history of innovations, some of which.

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[1] The study also developed a Diffusion of Innovations Index which may be used to rank order elementary and secondary schools according to degree of innovativeness. This aspect of the study is not discussed in this paper.

were discontinued, in an attempt to generate new constructs through an inductive empirical approach.[2]

This descriptive study of change in the school setting focused on relational groups as the unit of analysis rather than individuals. Rogers and Shoemaker, in a recent review of change literature[3] pointed out that research on change has generally used the individual as a unit of analysis. They suggested that the primary concern with individuals as units of analysis be abandoned in favor of relations between individuals as units of analysis. The study reported in this paper is consistent with this suggestion. The study sought to identify the interrelational components of a school's social system as this system interacted with its suprasystem and within its cultural context.

The natural history method of inquiry as used in anthropological field study provided the best available methodology for data collection in this study. Such a methodology does make it possible to study and describe the social and psychological conditions associated with introducing an innovation. At the same time, as Solon Kimball has pointed out,

> the natural history approach is suitable for studies investigating the kinds of interrelationships which obtain among persons who participate in school systems and between them and other institutions in the community...[4]

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[2] See Glaser, Barney G. and Anselm L. Strauss, The Discovery of Grounded Theory: Strategies for Qualitiative Research (Chicago, Aldine Publishing Company, 1967) for description of this type of research.

[3] Rogers, Everett M. and F. Floyd Shoemaker, Communication of Innovations: A Cross-Cultural Approach (New York, The Free Press, 1971) p. 80.

[4] Kimball, Solon T. "The Method of Natural History and Educational Research," in Education and Anthropology. Ed. George Spindler (Stanford, California, Stanford University Press, 1955) p. 83.

The research involved sixteen schools (eight elementary and eight post-elementary) in four school districts in Florida -- one rural, one urban, one in an area of rapid population expansion and one surrounding a major university. Two schools displaying a lesser degree of innovative practices and two schools with a higher degree were selected for study within each of the four school districts. The eight graduate students responsible for making the study in the schools were briefed on the field research methodology in training sessions.[5] Their work was supervised by Dr. Eddy, a professor of anthropology at the University of Florida.

The primary method of data collection was that of the non-scheduled interview, structured in terms of the research problem of learning about the significant events in the introduction, implementation, continuation or discontinuation of innovations in the school setting. The techniques used in the study were designed to provide the respondent with freedom to introduce materials that were not anticipated by the interviewer. Similarly, it allowed the interviewer to pursue avenues of questioning about significant conditions in the specific situation that were not foreseen to be important. The interviewers spent an average of eight days in each school setting.

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[5] The writers express their appreciation to Solon T. Kimball, Graduate Research Professor in Anthropology at the University of Florida, for his assistance in these sessions.

The initial selection of a particular innovation to be studied within a school was based on such factors as the judgement of the principal and county education officials, the willingness of the principal to allow the study of the innovation, the availability of persons associated with the innovation for interviews, the opportunity to observe the innovation, the adoption of the innovation within the past five years and the time available for study in proposition to the magnitude of the innovation. An attempt was also made to include discontinued innovations as well as those which were in use. Field notes were kept on each school (these varied from 60 to 200 typewritten pages). From these field notes detailed case studies were developed to describe the total picture surrounding the innovation selected within each school.

The data collected were subjected to two types of analysis. Through a series of seminars, the field researchers, under the direction of Dr. Eddy, examined the field notes and the case studies and identified twenty institutional arrangements or conditions that appeared to be associated with the introduction of innovations in the sixteen schools that were studied. A second analysis of the data was made by Dr. Mary Kievit, a sociologist. Dr. Kievit examined the field notes, case studies, and the list of twenty institutional arrangements or conditions. From this examination she identified twenty-three possible hypotheses which are presented in the next section.

Findings

As described in the previous section, the connecting link between the first phase and subsequent research studies was the development of hypotheses from the list of institutional arrangements or conditions.

The hypotheses generated seemed to fall into three basic categories. A number of hypotheses relate to the school as a social system, others relate to personnel within the school and still others relate to the nature of the innovation. However, some of the hypotheses seemed to cut across all three categories. The hypotheses which were developed follow:

Hypothesis 1

Budgetary allocations of more innovative schools will be directed toward supporting specific innovations in the school more frequently and consistently than in less innovative schools.

Illustration: In a low innovative school, although the decision was made to adopt a new science program, inadequate amounts of the various materials, which were essential supports for the program, were purchased.

Hypothesis 2

More innovative schools will more frequently than less innovative schools be characterized by the facility to involve personnel at points which facilitate the implementation of change without diffusing the decision-making perogatives through the structure to the point of eliminating or minimizing the capacity to centralize system decisions.

Illustration: In one of the less innovative elementary schools, most teachers reported that the principal let the teachers make most decisions regarding curriculum and instruction. Although he had suggested the change to departmentalization as had a county-wide committee including representatives from this school, the teachers felt they made the decisions. Some teachers perceived a need for administrative leadership and coordination and expressed the opinion that the principal was weak and remiss not to fill this function.

Hypothesis 3

An informal participatory style of leadership may be a facilitating condition for a more innovative system but it is not a sufficient condition.

Illustration: In a high innovative elementary school, teams planned instructional units, designated areas of responsibility; decided when to call on support services for assistance. Team leaders met weekly with the principal to discuss areas of concern. Reports indicated that the principal was very persuasive and influential but that teams did contribute to many decisions.

Hypothesis 4

Innovations that are congruent with the values and actions of influential parents are more likely to be adopted and continued.

Illustration: Immediately following desegragation, a group of white influential parents was upset by the fact that a black teacher was teaching a first grade class at a prestigeous elementary school. First, the parents went to the principal, then they went to the superintendent. Subsequently, the principal received a call from the superintendent who told him to begin a first grade team and to pair the black teacher in question with a good white teacher, so that the white teacher could insure quality education for the students.

Hypothesis 5

Perceived relative advantage and compatibility with existing norms and values of a particular innovation in achieving goals of the school increases the probability of its trial and if adopted, its persistence.

Illustration: In a low innovative elementary school, departmentalization was perceived to benefit teachers and students by minimizing the number of teacher preparations--both by area and by reducing, in some cases, the heterogeneity in ability levels.

Hypothesis 6

More innovative schools will more frequently provide opportunities for in-service education than low innovative schools.

Illustration: In one innovative elementary school, weekly meetings were scheduled for teachers to inform their peers about procedures and techniques being used and found successful.

Hypothesis 7

In more innovative systems, rewards and penalties will be dispersed in relations to the contribution made towards implementing the desired changes.

Illustration: In several of the more innovative schools, teachers who experimented with new practices were given additional support in terms of supplies, lower class loads and funds for travel.

Hypothesis 8

A more innovative school accomodates more diversity in personnel and instruction to the extent that the diversity is perceived to be transitional and not dysfunctional to achieving system goals than do less innovative systems.

Illustration: In a high innovative elementary school, one team of teachers acknowledged that they were viewed as being "too traditional" and this was expressed as if carrying some negative self-assessment as well as feeling sanctions from others. The teachers were aware of diversity and peer pressures in the direction of change.

In a low innovative elementary school, where many classrooms were observed, there is evidence of a high degree of uniformity. The composition of the teachers, with many local residents and a principal who waits to fill a vacancy until a resident is available, suggests that diversity is controlled through the selection of staff.

Hypothesis 9

More innovative schools are more explicit in describing the nature of the change sought than less innovative schools.

Illustration: In ahigh innovative elementary school initiating individually guided education, written materials were prepared for teachers which identified objectives and a sequence of procedures for achieving these.

Hypothesis 10

More innovative schools will more frequently than less innovative schools have established internal procedures for on-going evaluation of achievement of system goals.

Illustration: In less innovative schools, there was no evidence of established procedures for evaluation of progress towards system goals.

Hypothesis 11

Both administrators and teachers in more innovative schools are more frequently associated formally and informally with external sources of information about educational practices than are those in less innovative schools.

Illustration: The curriculum generalist in the more innovative high school was well informed through advanced study and professional journals which she shared with others as these related to specific concerns.

Hypothesis 12

More innovative schools tend more frequently than less innovative schools to designate some position(s) within the system as having the responsibility for stimulating and facilitating change.

Illustration: In one of the more innovative schools, the principal defined a newly created position of curriculum generalist as an internal change agent whereas the same position in some other schools was defined as an added resource for routine record keeping and miscellaneous administrative details.

Hypothesis 13

More innovative schools will more frequently than less innovative schools be characterized by closeness of supervision, particularly in the early stages of innovation.

Illustration: In an innovative elementary school, the learning specialist not only provided specialized assistance to teachers but informally served as supervisor and liason between the principal and teachers.

Hypothesis 14

Innovations adopted as a resolution of a crisis have low persistence with a short-term relative advantage.

Illustration: A Black Studies course was developed after a disruption by black students in the school who indicated a desire for this course. Enrollment has decreased during the second and third year. It is anticipated that the course will be dropped with integration of some of the content into history courses.

Hypothesis 15

More innovative schools are more alert to state influence and possible state funds than are less innovative schools.

Illustration: A high innovative elementary school had made effective use of special funds. A low innovative school had not even bothered to apply for this suplemental funding.

Hypothesis 16

Innovations requiring the cooperation of two or more teachers are more likely to be adopted and continued if there is a high degree of compatibility between teachers who must work closely together.

Illustration: In a school where teachers initiated the request to work together as a team, the teams have survived for several years. In another school, team members were arbitrarily assigned to work together and the team is considered a failure.

Hypothesis 17

In more innovative schools, a larger proportion of the content of formal and informal communication among peers pertains to educational practices and student achievement than in less innovative schools.

Illustration: In one low innovative elementary school, conversations among staff quite frequently centered on mutual acquaintances and friendships, conditions of health and other areas of personal concern. In contrast, one field worker records, in a high innovative elementary school, his surprise when one staff member asked another about his house, since this was one of the few personal references he had heard.

Hypothesis 18

Staff members in more innovative schools are more professional in their behavior than are staff members in less innovative schools.

Illustration: Notes of field workers included such descriptions as "the learning specialist qas quite professional and seemed very competent." Such observations appeared with seeming greater frequency for more innovative schools.

Hypothesis 19

Innovations which are congruent with the traditional role expectations of teachers are more likely to be adopted and successfully continued.

Illustration: Traditionally teachers have exercised authority over a given group of students for an entire term. In schools where team teaching was instituted, teachers were reluctant to increase the number of students in their rolls to the point of not being able to be familiar with each individual. Teachers were also reluctant to share a classroom. They felt their autonomy was diminished, and they were more hesitant to experiment, i.e., vary from the expected norm.

Hypothesis 20

Innovations which conform to the traditional role expectations of school administrators are more likely to be adopted and successfully continued.

Illustration: Traditionally the principal is given a considerable degree of authority to run the school and make internal decisions. In one case, county staff personnel violated the autonomy of the principal by coming into his school and setting up a special reading program. A clash of authority occurred when the county staff personnel sided with certain teachers in a dispute over the allocation of funds for the program. The county staff personnel won the battle, and the principal's authority in the school was momentarily diminished. However, the following year the teachers who had sided with the county staff were no longer in the school and the entire school reading program had been discontinued.

Hypothesis 21

Innovations congruent with the values or compatible with the political exigencies of community leaders are more likely to be adopted and continued.

Illustration: Before a school could implement a new program for 5th graders on personal hygiene and physical maturation, they had to secure the approval and support of various community leaders and parents. School leaders were anxious lest the program be misinterpreted by the community as a radical sex education program.

Hypothesis 22

There will be a greater degree of support of innovations by principals in more innovative schools than by principals in less innovative schools.

Illustration: A principal in a high innovative school used material resources as an enticement for teachers to engage in innovative programs.

A principal in a low innovative school reappropriated the funds that had been allocated by the county for a special reading class, thus undercutting the innovative reading class.

Hypothesis 23

The more innovative schools will receive greater assistance from their school system (financial and consultant) than will the less innovative schools.

Illustration: A high innovative school had been identified by the county staff as a "show place" school. Extra financial support and additional central office services were provided to this school.

During the study of field notes and formulation of the hypotheses, it was recognized that many of the more limited variables included within these hypotheses could be integrated within two theoretical constructs as independent variables and one as a dependent variable. Further, that these constructs could be expressed as a single hypothesis about relationships to educational change. Thus, an overarching hypothesis which encompassed all of the major hypotheses of this study was expressed as follows:

System innovative thrust interacts with personnel innovative thrust to determine trial rate, adoption rate, locus and type of innovation, and persistence rate, i.e.; selective educational change.

This hypothesis is more readily understood when the three central constructs are defined as follows:

a. System innovative thrust is that segment of total system power which is directed toward achieving innovation and change. Variables within this factor have been specified.

b. Personnel innovative thrust is that segment of total personnel power which is directed toward innovation and change. Varibales within this factor have been specified.

c. Selective educational change includes: innovation which is defined as relative to the system, i.e., a change in existing practices; adoption rate which is the frequency with which innovative practices survive the trial period; and persistence rate which is the length of time from adoption that specific innovative practices are continued.

Implications for further study

A working hypothesis of the Dissemination/Diffusion Project has been that the process of educational change is the most basic element of diffusion. If one can describe the dynamic relationship among those factors which affect simple changes in schools, one has the means at hand for determining the proper course of action in directing the successful diffusion of validated innovations.

The next steps in this direction should be the development and selection of specific measurement instruments. The instruments could be designed to test the following sub-hypotheses which were constructed through careful analysis of this study.

Sub-hypotheses specifying direction of relationships:

1. High system innovative thrust plus high personnel innovative thrust equal high trial rate equal high adoption rate of innovations with persistence related to system innovative thrust.

(a) Studied over time, trial rates and adoption rates might plateau.

2. High system innovative thrust plus low personnel innovative thrust equal moderate trial, moderate adoption of innovations with persistence varying in relationship to system innovative thrust.

(a) Studied over time, one might hypothesize that if system innovative thrust remains high, personnel innovative thrust will shift upward; if system innovative thrust is reduced, personnel innovative thrust would be reduced.

3. Low system innovative thrust plus high personnel innovative thrust equal high trial rate, moderate adoption rate of classroom contained innovation and low adoption rate of system-wide innovations, with low persistence.

4. Low system innovative thrust plus low personnel innovative thrust equal low trial rate, low adoption rate of innovations with low persistence.

The significance of the interaction of a complex set of variables cannot be over emphasized. This study only scratched the surface of a wealth of potential research studies which would examine the relationships between system and personnel innovative thrust as major variables in the change process within the school.

Finally, the study has demonstrated that data gathered from schools, using anthropological research methods of inquiry, can be useful in generating hypotheses. This approach appears to have considerable merit for future studies of educational change.